

Having described the invention, what is claimed is:

1 1. A tweeter comprising:
2 a light, freely carried thin sandwich plate (3,
3 20, 39, 60) which can be excited into multiple reflected
4 bending waves; and
5 at least one driver (1, 13, 14, 15, 26, 27, 28,
6 40, 41) which makes vibrating contact with and excites
7 the sandwich plate (3, 20, 39, 60),
8 wherein the driver (1, 13, 14, 15, 26, 27, 28, 40,
9 41) is designed to excite at higher sound frequencies,
10 the sandwich plate (3, 20, 39, 60) is designed for the
11 propagation of bending waves with low damping, the
12 sandwich plate (3, 20, 39, 60) is freely supported by
13 holding elements (12, 24, 25, 34, 35) with low damping,
14 and that the holding elements (12, 24, 25, 34, 35) are
15 designed to be low damping at higher sound frequencies.

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17 2. A tweeter as claimed in claim 1, wherein the
18 sandwich plate (3) has two thin, hard cover plates (9,
19 10) with a shear resistant, thin core layer (11) placed
20 between them.

21 3. A tweeter as claimed in claim 2, wherein the core
22 layer (11) has a honeycomb structure.

23 4. A tweeter as claimed in claim 3, wherein the core
24 layer (11) contains a spatially different distribution of
25 the elasto-mechanical properties.

26 5. A tweeter as claimed in claim 4, wherein zonal
27 thinning and/or cutouts (53 to 55) are provided in the
28 core layer and/or the cover layers.

29 6. A tweeter as claimed in claim 5, wherein the size
30 and arrangement of the zones (53 to 55) is such that a

3 basic pattern is always repeated in a reduced scale, and
4 is again repeated in these smaller structures.

1 7. A tweeter as claimed in claim 6, wherein the core
2 layer (29) includes a foil which contains periodically
3 repeated bulges (31) produced by embossing.

1 8. A tweeter as claimed in claim 7, wherein the
2 shape, arrangement and direction of the bulges is such
3 that the maximum shear resistance is obtained in all
4 moment directions.

1 9. A tweeter as claimed in claim 8, wherein the
2 bulges are knobs (49, 50) in the form of a square based,
3 four-sided pyramid, and the knobs (49, 50) are arranged
4 to face in the same direction in strictly periodic,
closely adjacent straight rows (47, 48), where each
second row (48) alternatingly contains knobs in the
opposite direction, and each row (47) is offset by half a
knob (49, 50) with respect to the neighboring rows (48).

1 10. A tweeter as claimed in claim 9, wherein the
2 holding elements (12, 24, 25, 34, 35) are suitable to be
3 placed or inserted into a larger support structure (36).

1 11. A tweeter as claimed in claim 10, wherein one side
2 of the holding elements is attached with a brittle-hard
3 adhesive to the sandwich plate, and the other side is
4 connected to the support structure.

1 12. A tweeter as claimed in claim 11, wherein the
2 holding elements have edges, and that the edges are
3 cemented in a brittle-hard manner to a cutout in the
4 support structure.

1 13. A tweeter as claimed in claim 12, wherein the back
2 side of the driver (40, 41, 46, 47) is designed as a
3 holding element.

1 14. A tweeter as claimed in claim 13, wherein the
2 plate diaphragm of a deep and/or medium sound plate
3 loudspeaker is designed as a support structure (36).

1 15. A tweeter as claimed in claim 7, wherein the core
2 layer (29) includes a foil which contains periodically
3 repeated bulges (31) produced by embossing.
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1 16. A tweeter as claimed in claim 7, wherein the
2 bulges are knobs (49, 50) in the form of a square based,
3 four-sided pyramid, and the knobs (49, 50) are arranged
4 to face in the same direction in strictly periodic,
5 closely adjacent straight rows (47, 48), where each
6 second row (48) alternatingly contains knobs in the
7 opposite direction, and each row (47) is offset by half a
8 knob (49, 50) with respect to the neighboring rows (48).

1 17. A tweeter as claimed in claim 1, wherein the
2 holding elements (12, 24, 25, 34, 35) are suitable to be
3 placed or inserted into a larger support structure (36).

1 18. A tweeter as claimed in claim 17, wherein one side
2 of the holding elements is attached with a brittle-hard
3 adhesive to the sandwich plate, and the other side is
4 connected to the support structure.

1 19. A tweeter as claimed in claim 18, wherein the
2 holding elements have edges, and that the edges are
3 cemented in a brittle-hard manner to a cutout in the
4 support structure.

1 20. A tweeter as claimed in claim 17, wherein the back
2 side of the driver (40, 41, 46, 47) is designed as a
3 holding element.

1 21. A tweeter as claimed in claim 17, wherein the
2 plate diaphragm of a deep and/or medium sound plate
3 loudspeaker is designed as a support structure (36).

1 22. A tweeter as claimed in claim 2, wherein the core
2 layer (11) contains a spatially different distribution of
3 the elasto-mechanical properties

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